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The report is organized as follows. The first section gives an introduction to the problem including the initial problem statement and applicable references. The second section gives a brief background, lists key stakeholders and their needs, along with objective systems assumptions. This section concludes with a statement of the effective need for the objective Logistics Readiness Reporting Systems. The third section of the report details the development of a potential framework for a Logistics Readiness Reporting System. This section documents the objective hierarchy for a proposed Logistics Readiness Reporting System.

This framework can be used as the basis for generating momentum for the development of the steering committee and working groups necessary to progress toward a Department of the Army Logistics Readiness Reporting Systems.

The final section gives a list of tasks and research next required to further develop this proposed system into a useful, relevant system.

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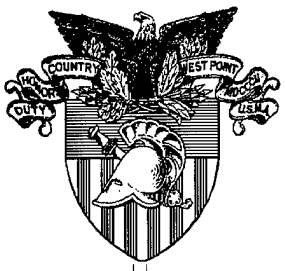


**United States Military Academy**
**West Point, New York 10996**

# OPERATIONS RESEARCH CENTER TECHNICAL REPORT

## 7 August 1998

# LOGISTICS READINESS NEEDS ANALYSIS

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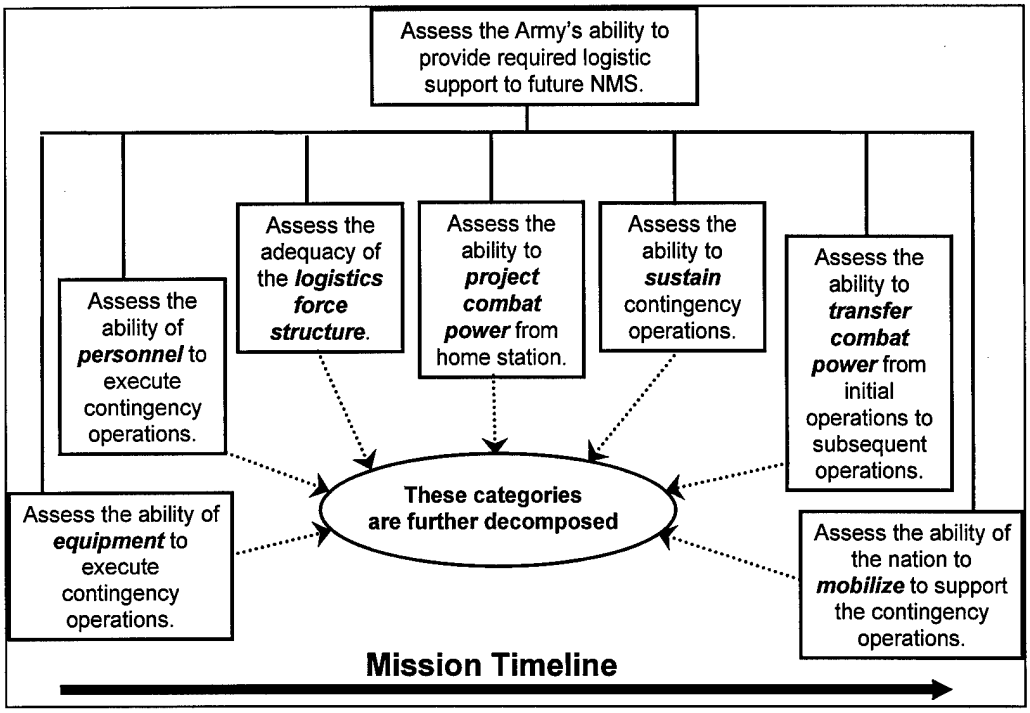
# EXECUTIVE SUMMARY

The following report documents the detailed needs analysis for a proposed Logistics Readiness Reporting System performed by the Department of Systems Engineering's Operations Research Center (ORCEN) at the U. S. Military Academy during academic year 1997-1998.

The report is organized as follows. The first section gives an introduction to the problem including the initial problem statement and applicable references. The second section gives a brief background, lists key stakeholders and their needs, along with objective system assumptions. This section concludes with a statement of the effective need for the objective Logistics Readiness Reporting System. The third section of the report details the development of a potential framework for a Logistics Readiness Reporting System. This section documents the objectives hierarchy for a proposed Logistics Readiness Reporting System. The first level of this hierarchy is shown below.




This framework can be used as the basis for generating momentum for the development of the steering committee and working group(s) necessary to progress toward a Department of the Army Logistics Readiness Reporting System.

The final section gives a list of tasks and research next required to further develop this proposed system into a useful, relevant system.

# Table of Contents

# List of Figures

# 1. Introduction

The Army needs a better way to determine the state of logistical readiness and the ability to support various contingency operations. Measuring logistics readiness may help the Army re-engineer its logistics systems for better efficiency and effectiveness. Logistics Readiness (LR) consists of a number of distinct components. One must understand the various components of logistics readiness and be able to convey the relationship of the components meaningfully to a decision-maker. Once the relevant components of logistics readiness are defined, one can develop metrics to adequately address the overall Army logistics readiness. Further, the metrics must not reflect the view of the cold war Army. The system should be able to measure logistics readiness as the Army transitions from a stockpile-based support strategy to a logistics strategy based on Velocity Management (VM) and Total Asset Visibility (TAV). Some of the components of LR of interest to leaders may include: equipment readiness, sustainability, and deployability.

Once properly framed, LR metrics can be incorporated into a "Logistics Readiness Reporting" (LRR) process. An effective logistics reporting process should establish a set of baseline measures, and a "Battle-Focused" assessment of the capability to support various contingency operations. As an objective, the logistics reporting system may provide an assessment of the ability to support various contingencies over time. For example, the ability to support a particular contingency may change given the introduction of reserve component support units. An objective LRR may also address the impact of deployability and sustainability on combat operations.

Regardless of the form that a future LRR takes, it is clear that under the current resource conditions, the Army must be able to measure logistic readiness in order to help better allocate its scarce resources.

## *1.1 Goal and Objectives*

The overall goal of this effort is to help the Army to develop a method of defining, measuring, and reporting its state of logistics readiness. The primary objective of this report is to lay the groundwork for the development of a logistics readiness reporting system. In order to begin to address this task this report will attempt to:

- Describe the need for a logistics readiness reporting system,
- Propose a definition of logistics readiness,
- Propose initial objectives of a logistics readiness reporting system,
- Propose initial components of a logistics readiness reporting system,
- Propose a plan for future tasks and research.

This report will describe the problem definition and needs and objectives analysis, undertaken. The report describes several issues and needs concerning logistics readiness

reporting. Finally, the report documents a proposed objectives hierarchy to address these needs.

## *1.2 Field Research*

### 1.2.1 Coordination meetings.

Analysts from the Operations Research Center (ORCEN) attended the following coordination meetings during the year to learn more about logistics readiness issues.

a. LTC Carlton attended an information briefing at the Logistics Integration Agency (LIA) at New Cumberland, PA on 15 September 1997. Ms Stephanie Zdunski, Mr. Paul Setcavage, and Dr. Susan Alten were the principle attendees.

b. LTC Carlton attended a series of meetings at the Logistics Support Activity (LOGSA) in Huntsville, AL on 3-4 December 1997. The purpose of the visit was to investigate the various databases available to support the development of logistics readiness Measures of Effectiveness (MOE).

c. LTC George Topic was invited to West Point to present an Officer's Professional Development seminar on the "Master Logistics Vision." LTC Topic gave his presentation to the officers in the Department of Systems Engineering on 6 November 1997.

### 1.2.2. Client visits.

The principle clients, LTC Tracy Ellis and Ms. Stephanie Zdunski visited the ORCEN on three occasions, 4 February, 17 April and 11 May 1998 to receive update briefings and provide feedback to the analysts.

### 1.2.3 Visits to observe Monthly Readiness Review (MRR) briefings.

Each month, the Army Chief of Staff (CSA) receives a briefing from the Department of the Army Staff that summarizes the readiness status for the Army. The briefing covers the details of the previous month's Unit Status Report (USR) reports from the field. Prior to each briefing to the Chief of Staff, principle staff officers receive pre-briefs to familiarize them with key USR issues. Analysts attended several pre-briefings and MRR briefs in order to become familiar with some of the current readiness issues facing the Army's senior leaders. The following is a list of MRR briefings that ORCEN analysts attended.

a. 14-15 October 1997, attended MRR pre-briefings to MG Sullivan, the Deputy Chief of Staff for Logistics (DCSLOG) Director for Supply and Maintenance, MG Cannon, Assistant DCSLOG (ADCSLOG), and MG Soriano from the Office of the Deputy Chief of Staff for Operations (O/DCSPOS).

b. 22 December 1997, attended MRR pre-briefing to MG Sullivan, Director DCSLOG Supply and Maintenance.

c. 5 January 1998, attended MRR briefing to GEN Reimer, Army Chief of Staff.

d. March 1998, attended MRR pre-briefing to LTG Coburn, the Army DCSLOG.

### 1.2.4 In Progress Reviews.

Analysts of the ORCEN gave In Progress Review (IPR) briefings to key leadership during the course of the research. The purpose of the IPRs was to update key leaders on the status of the research and to obtain guidance regarding the direction of future research efforts. The following is the list of IPRs given during the year.

a. 4 March 1998, IPR briefing to MG Sullivan, DCSLOG, Director of Supply and Maintenance.

b. 4 March 1998, IPR briefing to MG Cannon, ADCSLOG.

c. 29 April 1998, IPR briefing to Mr. Larry Smith, LIA.

d. 19 May 1998, Final project briefing to MG Sullivan, DCSLOG, Director of Supply and Maintenance.

## *1.3 Primary References.*

The following are the primary references used to support this research effort.


a. Army Regulation 220-1, Unit Status Reporting, September 1997.

b. Army Regulation 700-138, Army Logistics Readiness and Sustainability, September 1997.

c. Betts, Richard K., *Military Readiness: Concepts, Choices, Consequences,* The Brookings Institute, Washington, DC, 1995.

d. Moore, S. C., Stockfisch, J. A., Goldberg, M. S., Holroyd, S. M., and Hildebrant, G. G., *Measuring Military Readiness and Sustainability*, RAND, Santa Monica, CA 1991.

e. Ratliff, W. L., Jr., and Carlton, W. B., Analysis of Fleet Operational Readiness Rates, Operations Research Center Technical Report, West Point, NY, 1998.

## 2. Background

The purpose of this research was to define the elements of a Logistics Readiness Reporting system that would meet the needs of key Army logistics leaders. Research efforts followed a systems engineering design process approach in order to fully and adequately address the complex, interrelated nature of designing and developing an effective Logistics Readiness Reporting System.

The overall long-term goal of the research is to investigate the various components of logistics readiness and to convey the relationship of the components meaningfully to a decision-maker. A long term by-product of this research is the development of a process and associated metrics which adequately address the state of logistical readiness for the Army.

### *2.1 Primitive Need*

The primitive need is a preliminary statement of the problem as perceived by the user. The statement of the primitive need is the starting point beginning all efforts to define the problem and to develop a solution. Usually a statement of primitive need is simply stated, yet may not capture all relevant elements of actual problem at hand.

In this instance, the Assistant Deputy Chief of Staff for Logistics (A/DCSLOG) provided the statement of primitive need. Roughly quoted, this initial statement of primitive need was:

> *"The Army needs a better way of assessing our ability to provide adequate logistics support."*[1]

This statement of primitive need led to the investigation of the needs of other key Army leaders (stakeholders) and a more precise definition of the problem.

### *2.2 Stakeholders' Needs*

A "stakeholder" is anyone who has a relevant interest in the development of or output from a particular system. The development of an effective system should recognize and consider the needs of all potential stakeholders.

In context of this research, a stakeholder in a Logistics Readiness Reporting system is anyone who would provide input to the system or use the information provided by such a system. Thus, the number of stakeholders for a logistics readiness reporting system is extremely large and varied. The stakeholders occupy various positions, both tactical and logistic, throughout the Army. The following is only a partial list of key stakeholders.

a. U. S. Congress. The U. S. Congress has recently enacted Public Law 105-85, Section 322, "Expansion of Scope of Quarterly Readiness Reports." This law requires

[1] 14 October 1997 meeting with MG Cannon, A/DCSLOG, The Pentagon, Washington, DC.

the services to provide specific logistics readiness information to the Congress. Even without having enacted this law, the Congress is a key stakeholder, because it provides financial resources to all services. Financial resources directly affect each service's ability to provide logistics support.

b. Office of the Deputy Chief of Staff for Operations (O/DCSOPS), U. S. Army. The Army O/DCSOPS is primarily responsible for the development, and reporting of Army Readiness under the provisions of AR 220-1, Unit Status Reporting. Any new unit-level status reporting system will likely have an impact on AR 220-1 and thus require coordination with O/DCSOPS.

c. Office of the Deputy Chief of Staff for Logistics (O/DCSLOG), U. S. Army. As stated above, the O/DCSLOG is the principle client for this research and is therefore a key stakeholder. The O/DCSLOG is the Army's principle staff agent for all logistics matters and is critical to the development and implementation of any new logistics readiness reporting system.

d. Army Materiel Command (AMC). The AMC is responsible for providing materiel and equipment to the Army. Thus, their role is critical in determining the overall supportability and maintainability of Army equipment. AMC must play a key role in development of a new logistics readiness reporting system.

e. Combined Arms Support Command (CASCOM). As the Training and Doctrine Command's (TRADOC) coordinator for all logistics and support issues, CASCOM must play a key role in the development of a new logistics readiness reporting system.

NOTE: Together the O/DCSLOG, AMC, and CASCOM are the key "logistics triumvirate" in the Army, and must fully participate in the development of any new logistics system.

f. Logistics Integration Agency (LIA). The LIA's mission is to integrate logistics systems and processes for the O/DCSLOG. The LIA already performs logistics analysis and is critical in developing metrics in support of O/DCSLOG.

g. Concepts Analysis Agency (CAA). In accordance with AR 700-138, September 1997, CAA is responsible for the analysis of logistics capability for all OPLANs, CONPLANs, and FUNCPLANs for the Army. Their expertise in analyzing the logistics requirements in support of these war plans also makes CAA a key stakeholder.

h. Other key stakeholders may include:
(1) Approptiate Staff Agents of the Joint Staff, J3, etc.
(2) Warfighting Commanders in Chief (CINC).
(3) Army Program Analysis and Evaluation (PA&E).

(4) Army Office of the Deputy Chief of Staff for Personnel (O/DCSPER).
(5) Army Chief of Staff for Installation Management (ACSIM).
(6) Civilian contractors with logistics expertise such as: RAND, LMI, etc.

This is only a partial list of key stakeholders. One of the necessary tasks as research progresses is to develop a complete list of stakeholders and to ensure that each is considered in the development of a new logistics readiness reporting system.

### *2.3 Logistics Readiness Reporting System Key Questions*

As the list of stakeholders grew and as their needs became more clearly articulated, it became clear that a set of assumptions are needed. Assumptions are needed so that all concerned fully understand the framework within which this system will be defined. These assumptions are critical because they frame an *ideal* reporting system not necessarily the system that will finally be developed and implemented.

An ideal readiness reporting system should answer the following three questions[2]

a. Readiness for *when*? Figure 1 gives a representation of how readiness might change as a function of time. An effective readiness reporting system should be able to reflect changes over time.

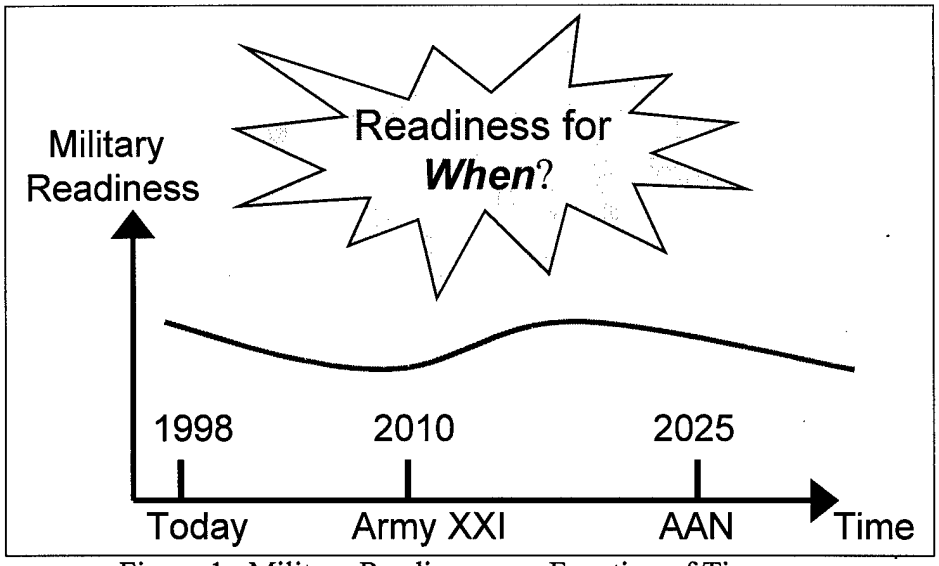


Figure 1. Military Readiness as a Function of Time.

Evaluating the readiness of the force today is different from evaluating the readiness of the force ten or twenty or more years into the future. The evaluation must take on the changes in one's own force as well as changes in the capability of an anticipated threat as

[2] Betts, Richard K., Military Readiness: Concepts, Choices, Consequences, The Brookings Institute, Washington, DC, 1995, pg. 33.

time increases. This is a critical and an important dimension in developing an effective and meaningful readiness reporting system.

b. Readiness for *what*?

Just as it is imperative to know when the force will be called on to fight, it is imperative that readiness be evaluated against an anticipated mission. During the cold war it was clear that the predominant threat was a Soviet attack into Central Europe. Today the threat is not so clear. Are we prepared to fight two Major Theater Wars (MTW's)? If so, which two? Further complicating the evaluation is a wide range of possible "starting conditions." What will be the starting conditions for a future mission? Will we be supporting other major deployments when called on to fight two MTW's? Answers to these and similar questions give a wide range of potential "starting conditions" directly relevant to the evaluation of overall readiness posture. Widely varying starting conditions likely lead to widely varying assessments of readiness.

c. Readiness *of* what? Figure 2 shows an outline of the possible levels and perspectives from which readiness might be viewed.

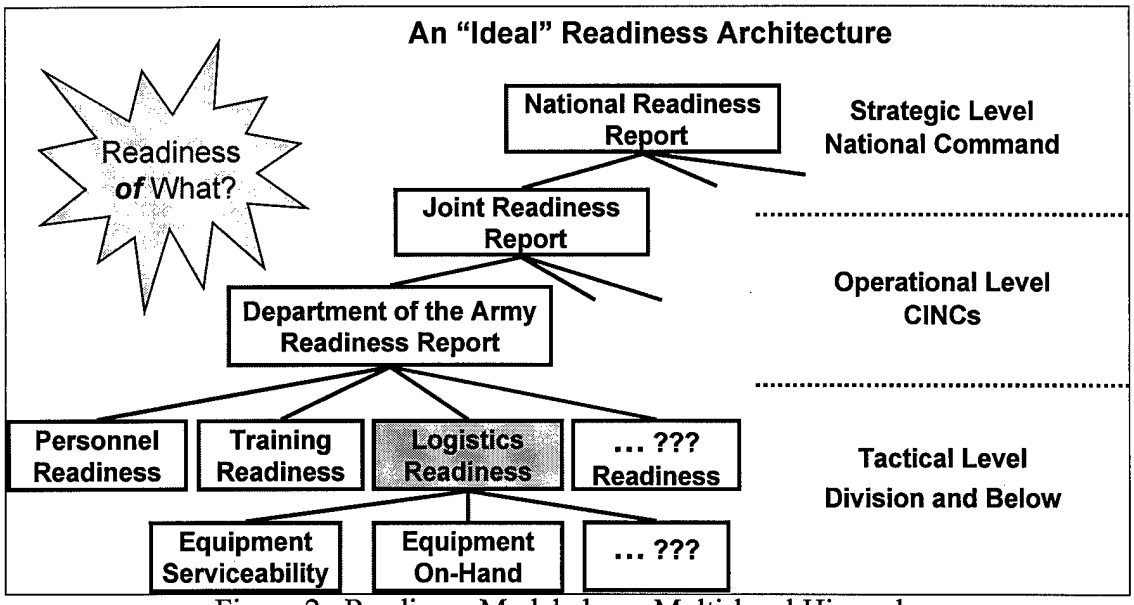


Figure 2. Readiness Modeled as a Multi-level Hierarchy

Answering this question for an overall readiness evaluation involves knowing the perspective that is taken with regard to the readiness evaluation. In other words, the evaluation of readiness may differ dramatically depending upon the level form which readiness is viewed. Readiness may be viewed from any or all of the following levels: tactical, operational, or strategic. A tactical unit (company, battalion, brigade or division) may be "ready" while the CINC to which that unit may be assigned may not be ready for a particular mission.

Another issue requiring resolution is that of which subordinate component of readiness needs to be addressed. In working with the O/DCSLOG, it may be necessary to restrict evaluation and analysis to the subordinate element highlighted above in Figure 2. Even though extremely complex and challenging, the evaluation of logistics readiness from the Army's perspective is only a small component of the nation's overall readiness posture.

### *2.4 Objective System Assumptions*

Answering these three key questions requires that a separate "dimension" for time, mission and reporting level be incorporated into an objective readiness reporting system. Research in these and related areas led to the development of four critical assumptions necessary for the development of an objective logistics readiness reporting system. These four assumptions are:

1. The system should be structured to address logistic readiness issues at the tactical, operational, and strategic levels.
2. The system should measure the readiness to support either planned or unplanned contingency operations (e.g. Major Theater Wars (MTW), Small Scale Contingencies (SSC), and Operations Other Than War (OOTW)).
3. The system should measure the ability to logistically support short-range planning for current contingency operations, mid-range planning horizon (Program Objective Memorandum (POM) years), and long-range planning for contingency operations (during the AAN planning horizon 2025 and beyond).
4. The system should measure "readiness" not just "status," and also maintain a mission focus with the Revolution in Military Logistics (RML) being used as the guiding vision.

This final assumption stems from the recognition that the current USR reporting system, at best reports the current status of units and does little analysis to project or forecast a unit's capability beyond the current reporting period. A new reporting system should actually assess future capability as well as current capability. Finally, any new reporting system should recognize and address the ability of the force to provide logistics support in the context of the Revolution in Military Logistics (RML). In short, the RML will cause the Army to transition from a support by "mass" system to a support system that is based on "velocity management" and "total asset visibility."[3] Any new reporting system should use metrics that measures logistics capabilities in these terms.

[3] Topic, George, LTC, "The Revolution in Military Logistics," Briefing presented at USMA, 6 November, 1997.

## 2.5 Effective Need

Development of the effective need is critical to complete understanding and definition of the problem. The effective need is "generally more broad than the primitive need."[4] The effective need serves as the problem definition and should restate the overall goals and objective of the system under consideration. After extensive research and discussions with many key stakeholders, we derived the following statement of the effective need shown below in Figure 3.

***Effective Need***

**The Department of the Army needs a system to assess its current ability to provide the required logistic support to the future National Military Strategy (NMS).**

**The system should be based on a set of well-defined metrics that are easily understood by civilian and military leaders. The system should also identify logistic supportability risks, deficiencies, and shortfalls and provide options for their resolution.**

Figure 3. Statement of the Effective Need.

This statement of effective need limits the scope of the proposed system to include evaluation of only "Logistics Readiness." But the system should address each of the three questions posed by Betts listed above. The system should be able to answer the logistics readiness questions for the "future National Military Strategy." This ties together the "for when" and "for what" issues. Implicitly, this effective need statement takes an Army perspective of the problem because the principle users of this system will be key Army leaders.

In summary, any new proposed logistics readiness system should be able to provide an evaluation of the ability of the Army to logistically support a specific mission that supports the National Military Strategy at some pre-defined point in the future.

[4] Introduction to Systems Design, Course Notes, Volume 1, Lesson 4, page 4-2, Department of Systems Engineering, USMA, West Point, NY 1998.

## 3. A Proposed Logistics Readiness Reporting System Hierarchy

The following section outlines an initial logistics readiness reporting system hierarchy. This proposal is intended to serve as an initial "strawman" to generate discussion and exchange of ideas among the key stakeholders and to lead to further refinement of an objective reporting system. This is not the final answer. Indeed, a "final" reporting system may not resemble this system at all. However, this system will allow reasonable discussion to begin from a rational starting point.

### *3.1 Input-Output Model*

One method of gaining understanding of the purpose and function of a system is to analyze it in terms of the inputs, processes and outputs of the system. "The Input-Output (I-O) Model is a tool to help designers scope and bound the problem."[5] In developing an I-O model, the system and its processes is considered to be a black box. The black box processes are still undefined, but the system will accept a set of inputs, perform a series of functions producing a set of outputs. The model is used to help the system designers understand factors that influence the system under consideration. Figure 4 is the graphic representation of the I-O model for this system.

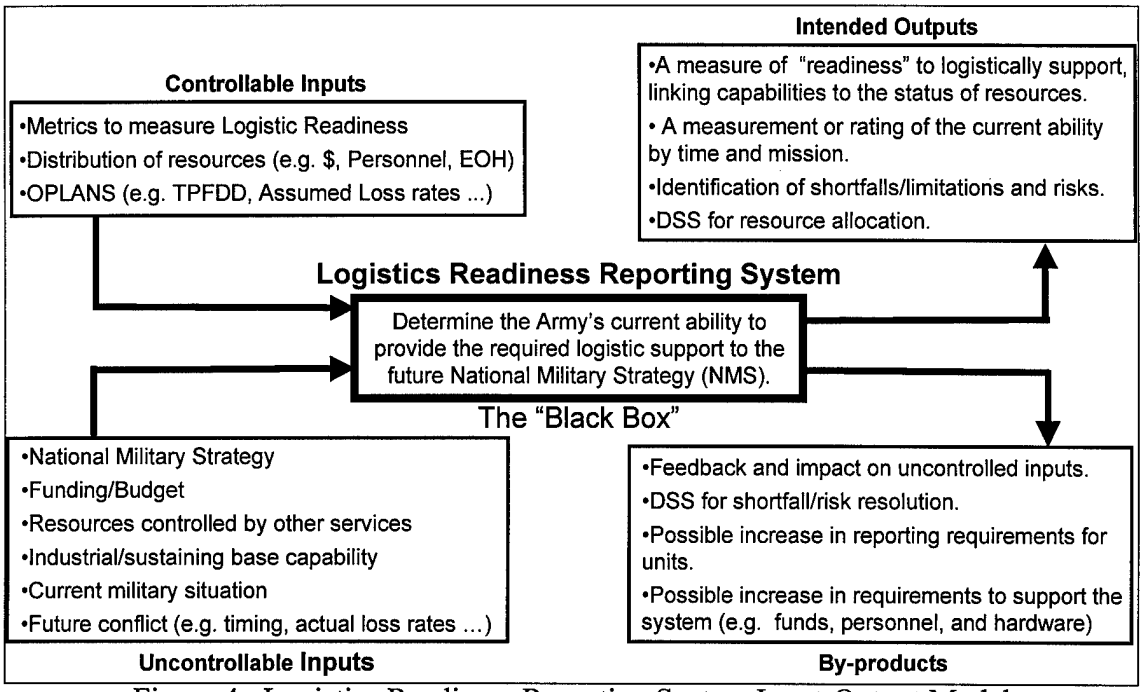



Figure 4. Logistics Readiness Reporting System Input-Output Model

a. Controllable Inputs. Controllable inputs are those to which a decision maker may make changes. "Controllable inputs can be derived from (answering) the question,

[5] Introduction to Systems Design, Course Notes, Volume 1, Lesson 4, page 4-7, Department of Systems Engineering, USMA, West Point, NY 1998.

'What is needed to start the process from which the outputs can be achieved?' "[6] In this instance, the controllable inputs fall into three general categories.

1. Metrics must be selected to provide the required information. Metrics can take any form, but their selection is key in providing adequate logistic readiness information without causing undue reporting or training requirements on the part of the users.

2. Army leaders at all levels make resource distribution decisions. Therefore, to some degree, the Army controls the amount of resources provided for logistic support.

3. The Army develops the plans and schedules used to support the NMS. The Army can choose to alter the plans used for various missions.

b. Uncontrollable Inputs. "Uncontrollable inputs are those environmental characteristics or tangibles that are available or that influence the performance of the system."[7] Uncontrollable inputs are not under the direct influence of Army leaders. Therefore, the Army can not easily change these inputs. The uncontrollable inputs are:

1. National Military Strategy. The National Security Council and the Joint Chiefs of Staff derive the NMS and the mission support requirements. The Army has input to the NMS only to a limited degree.

2. The U. S. Congress provides the overall funding and budget to the services. The Army allocates resources provided, but has limited influence on the overall magnitude of the resources available.

3. Other services provide resources that influence the Army's ability to provide logistic support. For example, the U. S. Air Force provides the airlift that would be used to support contingency operations.

4. The Army has no influence over the current state of military affairs in the world. The current world military situation is a "state of nature" from which the starting conditions are derived that influence the Army's ability to provide logistic support. The current deployment and support of soldiers across the world will have an effect on the Army's ability to support future contingency operations.

5. The Army has no influence over when, where, or who will make up the next contingency operation. Even though we may anticipate who the most likely threat would be, we still can not predict when or even if that threat will actually emerge.

c. Intended Outputs. "Intended outputs may be considered goals or objectives of the system – what it is meant to accomplish. ... Intended outputs should reflect what the system should do or provide in response to the need."[8] A logistics readiness reporting system should produce as primary outputs the following items.

1. A measure of "readiness" to logistically support a given contingency mission, at a specified point in the future, given a set of starting conditions. This measure should link support capabilities to the status of resources.

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[6] Ibid., pg. 4-9.
[7] Ibid.
[8] Ibid.

2. The measure of readiness should identify shortfalls, limitations and risks associated with a given specified mission.

3. The system should serve as a decision support system (DSS) allowing Army leaders to rationally allocate resources in order to positively influence the readiness posture of the Army.

d. By-products. "By product outputs are unintentional or incidental outputs of the process. These (outputs) may have negative or positive effects on achieving the goals of the system."[9] The system designer should anticipate these incidental outputs in order to minimize negative system side-effects and possibly capitalize on windfalls. Some by-products of a new logistics readiness reporting system are listed below and shown in Figure 4 above.

1. The Army could achieve a positive outcome in that a useful system could provide feedback to influence some of the uncontrollable inputs. For example, if a serious shortfall is identified in the ability to provide support for a given mission, then the Army could petition the Department of Defense and the Congress to provide more resources to offset the shortfall.

2. Another positive outcome is that the system could be used to resolve shortfalls and risks for a given mission. This is somewhat similar to the previous by-product except that feedback would be provided to the controllable inputs and the evaluation process could iterate to determine the degree of risk resolution.

3. A new reporting process might cause increased reporting and training requirements on units in the field. This is a negative by-product of the system that should be anticipated and minimized as the system design progresses.

4. Similarly, a new readiness reporting system might cause the Army to experience an increase in system support costs. These increased resource requirements would likely be most severe in terms of money, manpower and system hardware and software demands. This by-product should be anticipated and the design should minimize any increases in these areas.

### *3.2 System Objectives Hierarchy*

In order to complete a detailed needs analysis, the objectives (or goals) of the system must be specified. These objectives can be organized into a hierarchy into one of three general categories[10]:

» Top-level objectives. Top level objectives "are usually broad and stem directly from the effective need of the customer. When all the top level objectives are met, the system has satisfied its effective need." The top level objective for this proposed logistics readiness reporting system is a condensed statement of the effective need listed above in Figure 3.

» Lower-level objectives. Lower level objectives "answer the question: 'How do I satisfy the higher level objective?'" Taken together, success in each lower level objective should directly translate to success in the top level objective. This research

[9] Ibid.

[10] Ibid., pg., 4-3.

gives an initial proposal for some lower level objectives. But the final selection of these objectives needs much work from a committee of expert logisticians and analysts.

» Bottom-level objectives. These objectives are "very specific and need to be measurable." This research will provide a glimpse of some of the bottom level objectives, but development of the bottom level objectives will require extensive further work and coordination within the Department of the Army.

Figure 5 shows the top-level objective and seven lower-level objectives for a proposed Logistics Readiness Reporting System. The lower-level objectives are sequenced with respect to a temporal view of assessing readiness. The personnel and equipment readiness assessments are closely related to the current starting conditions or current unit status. As the sequence of lower-level objectives moves farther to the right, the objectives mirror to some degree the tasks required to execute a "general" contingency operation. Finally, the lower level objective at the far right would assess the ability of the nation's industrial base to sustain the contingency operation for the indefinite future.

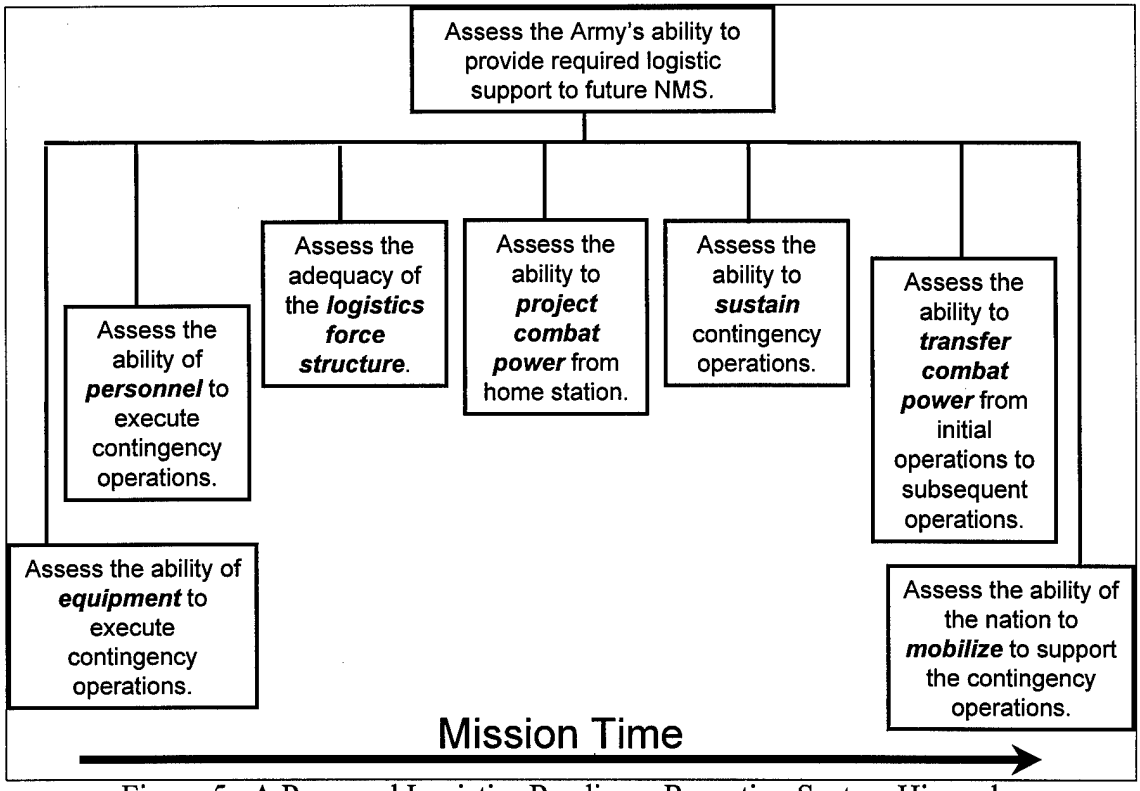


Figure 5. A Proposed Logistics Readiness Reporting System Hierarchy

### 3.3 System Components

This section examines more in depth the lower level objectives outlined in Figure 5, above.

1) Equipment Readiness Assessment: This lower level objective should assess the current status of equipment in a unit. The assessment should answer the question, "Is the appropriate amount and type of equipment in an operational condition to accomplish the unit's mission in accordance with the National Military Strategy?" In addition, it should assess the ability of crews to maintain and operate the equipment during the duration of the contingency mission. Figure 6 shows that the assessment of Equipment on Hand (EOH) and Equipment Serviceability (ES) are bottom level objectives that might be associated with this lower level objective. The other two lower level objectives could be assessed using combat simulations as appropriate.

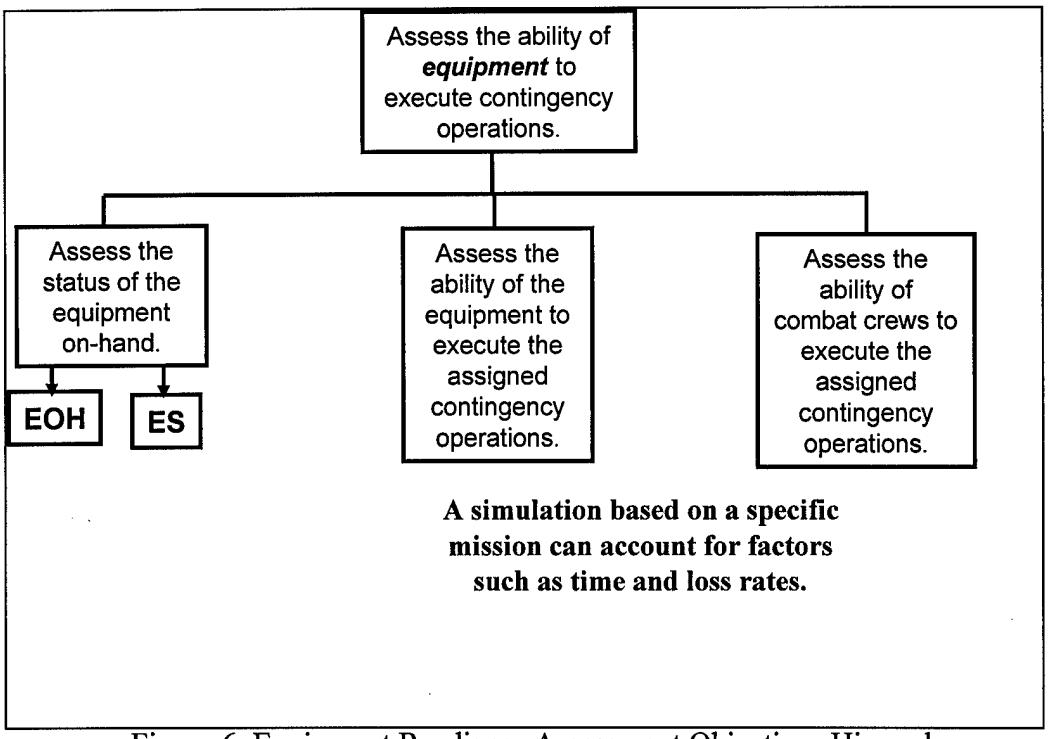


Figure 6. Equipment Readiness Assessment Objectives Hierarchy

2) Personnel Readiness Assessment. The next area that should be assessed is the status of the personnel required to support the National Military Strategy. "Personnel" in this context includes all personnel required to support a specific mission. All personnel must be considered because the Army's personnel system, from recruitment through distribution to units is required to resolve potential shortfalls. Figure 7 below shows the hierarchy related to the assessment of personnel readiness. The hierarchy consists of four lower level objectives. First, all units designated to support a contingency mission must have sufficient assigned strength. Next, the assigned personnel must fill sufficient collective positions as crews. Unit personnel must also be prepared to deploy to the theater, and should meet all medical, dental, and legal deployment criteria. Finally, any non-combatant personnel in a contingency area must be evacuated. Units must be trained and ready to conduct such a mission. This last lower level objective might be assessed as a separate issue at a higher level in the objectives hierarchy. This is an example of an area needing further exploration and resolution.

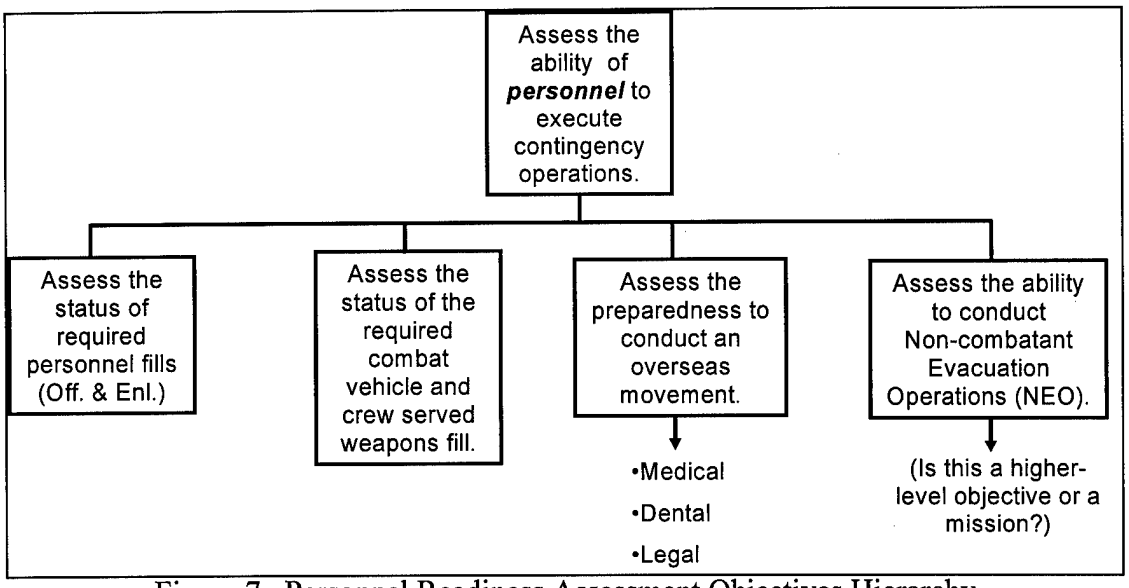

Figure 7. Personnel Readiness Assessment Objectives Hierarchy

3) Logistic Force Structure Readiness Assessment: The next issue requiring assessment is the adequacy of the logistic force structure to support the National Military Strategy. This assessment objective differs from the previous objective in that it should specifically consider the ability of the designated logistic force structure to support the assigned mission. The previous objective assesses the combat and command personnel assigned to the mission. There are three lower level assessment objectives related to the assessment of logistics force structure shown in Figure 8. The first objective should answer the question, "Are the correct unit types assigned for the mission?" The next question to be answered is, "Do these units have sufficient logistics personnel assigned?" Final question for assessment is, "Is the on hand logistics equipment adequate to support the mission?" Answers to these three questions should give the leadership a clear assessment of whether the logistics force structure assigned to the mission is adequate to support that mission. Care should be taken to ensure that the personnel issues here do not duplicate personnel assessments in the previous objective.

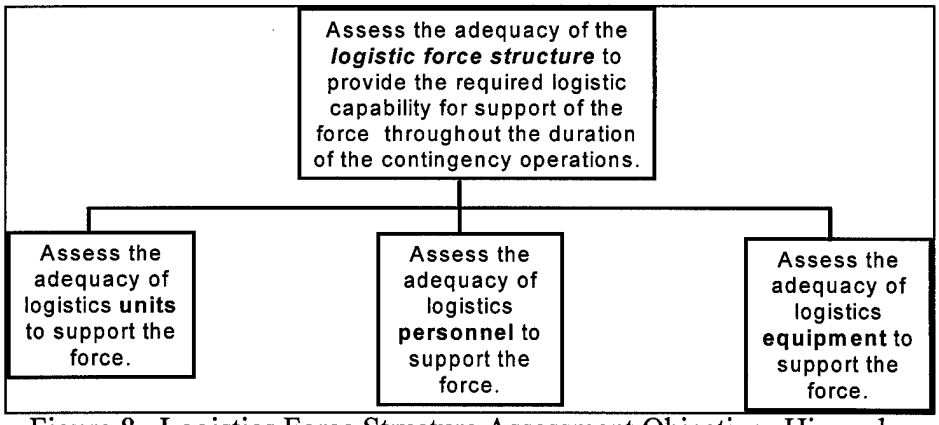

Figure 8. Logistics Force Structure Assessment Objectives Hierarchy

4) Deployability Readiness Assessment. Deployability is the ability to project combat power from home station to the intended theater in accordance with the National Military Strategy. This assessment consists of two lower level objectives as shown in Figure 9. The first lower level objective assesses whether or not the infrastructure, personnel and equipment at the home station is adequate to support the deployment of the required forces. For example, this assessment answers the question, "Will railheads, airfields and ports provide sufficient throughput to accomplish the deployment on the proposed schedule?" Next, "Are the personnel sufficient to support the deployment?" This assessment differs from earlier assessments in that it measures the personnel support required to operate and maintain the ports of embarkation. This assessment also should measure and report the training status of the personnel supporting the deployment. The next objective is to assess the status of the equipment directly related to deployment execution. Issues addressed here should be "Is there sufficient materiel on hand?" and "Is the equipment serviceable?" The last set of objectives is an assessment of the infrastructure, personnel and equipment at the point(s) of debarkation for the mission. The assessment of these issues should be similar to those used to assess home-station deployment ability.

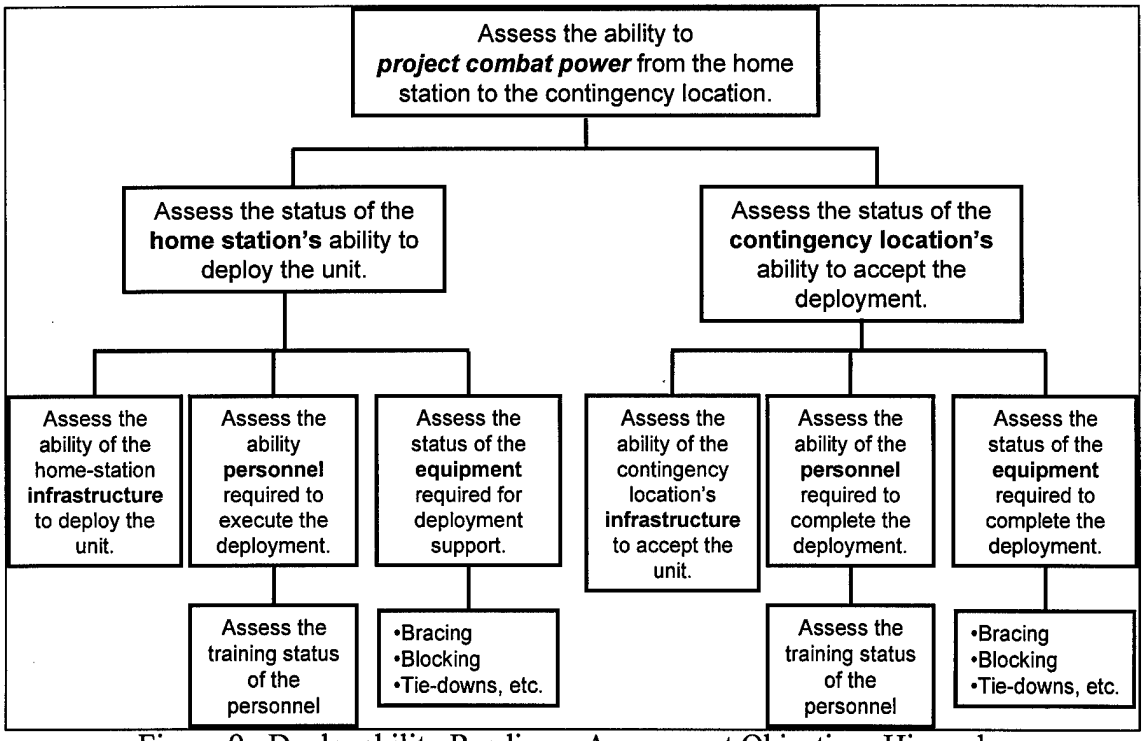

Figure 9. Deployability Readiness Assessment Objectives Hierarchy

5) Sustainment Readiness Assessment: These objectives assess the ability of the Army to provide resources to sustain combat operations for the anticipated length of the mission in accordance with the National Military Strategy. There are three lower level objectives associated with this assessment. The first is to assess the status of follow-on Reserve Component units in relation to their ability to have trained personnel and adequate

equipment to support the mission, provided this was not assessed under the logistic force structure assessment objective earlier. Next, the ability of the logistics structure to provide Total Asset Visibility and fully capable Velocity Management should be provided. This is to determine whether any special procedures or shortfalls may arise in any particular class of supply. Finally, an assessment should be made of the ability of the logistics force to provide support to the combat force. This might be done using appropriate combat simulations that are sufficiently robust to model logistics support.

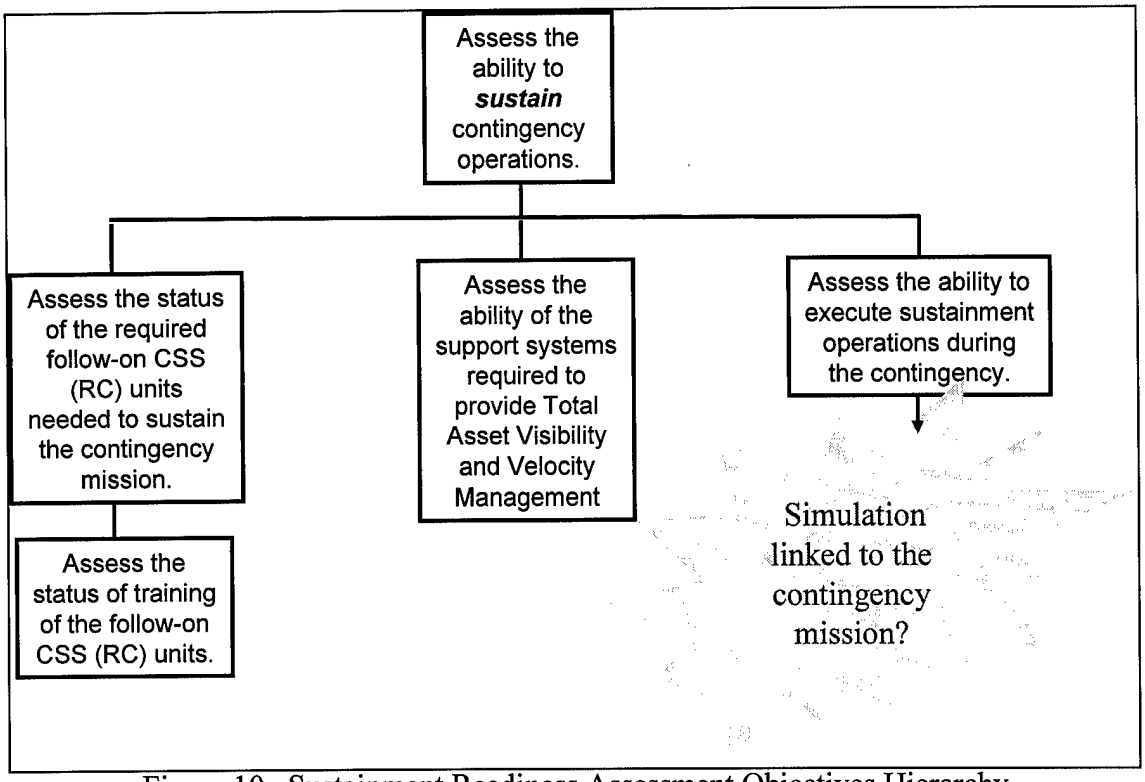


Figure 10. Sustainment Readiness Assessment Objectives Hierarchy

6) Redeployment Readiness Assessment. Redeployment is the ability to transfer combat power from an initial operation to subsequent operations in accordance with the National Military Strategy. The assessment of this objective should be similar to the assessment of Deployment Readiness discussed above, see Figure 9. The difference in this case is that the "deployment" occurs from one combat theater to another under the rubric of our nation needing to fight two Major Theater Wars (MTW). If a second contingency mission is not required under the National Military Strategy, then redeployment would be to home station and not another theater. Figure 11 shows the objectives hierarchy associated with assessing the ability to redeploy to another theater.

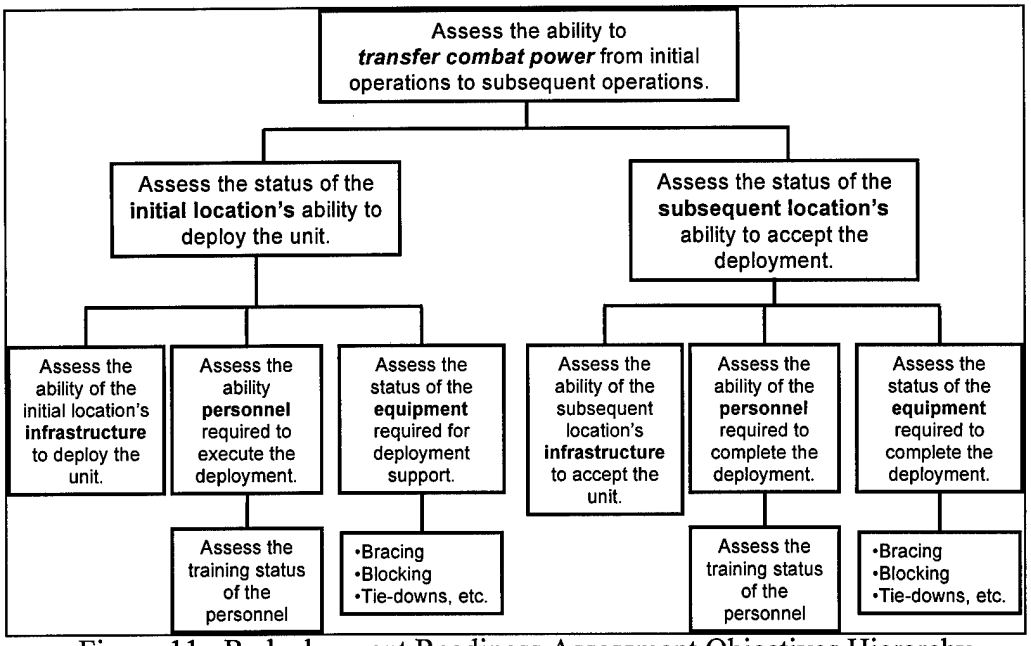

Figure 11. Redeployment Readiness Assessment Objectives Hierarchy

7) National Mobilization Readiness. National mobilization is the ability of the nation and national level resources to support greatly extended combat operations in accordance with the National Military Strategy. This assessment would look at the ability of the nation to support conflict for much longer than several months. If a conflict might require the nation's resources, both equipment and manpower, to support the operation, then this issue should be assessed. Another case where assessment of national resources is vital to the outcome of the conflict would occur if an enemy made a direct assault on a scarce resource, such as oil, so that the nation might need to alter current policy to be successful. Figure 12 shows the lower level objectives associated with the assessment of national mobilization readiness.

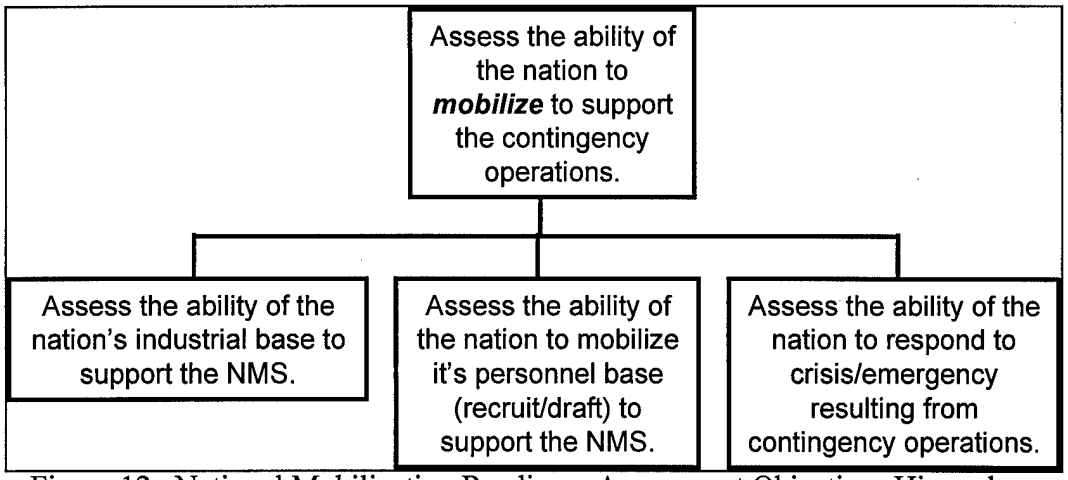

Figure 12. National Mobilization Readiness Assessment Objectives Hierarchy

# 4. Conclusion

## *4.1 Summary*

This report details the development of a potential framework for a Logistics Readiness Reporting System. The report identifies the effective need of the Army in Figure 3, and documents the objectives hierarchy for a proposed Logistics Readiness Reporting System.

This framework can be used as the basis for generating momentum for the development of the steering committee and working group(s) necessary to progress toward a Department of the Army Logistics Readiness Reporting System.

## *4.2 Recommended Future Research and Development Efforts*

The following are some of the tasks that need to be accomplished in the near future to more fully develop a useful Logistics Readiness Reporting System.

» The most important task is to gain support for the proposed system by the senior logistics leadership in the Army. This support is critical so that committees and working groups can be formed and leaders can be identified who are empowered to make and implement decisions regarding this system. If strong leadership support is not obtained, then there is likely little need to continue this effort.

» Identify all stakeholders and refine stakeholders needs. The logistics community is large and diverse in terms of the roles and functions required to provide support. In order to ensure that all roles and functions are included in a Logistics Readiness Report, the appropriate stakeholders and their needs must be fully identified. Section 2.2 provides only a partial list of stakeholders, some of whom may not know that work is proceeding in this arena.

» Identify other researchers in this field. This research has led to the discovery that there is other work being done in this arena at the Joint Staff and Department of the Army Level. This work should be identified and codified into one consistent, accepted readiness reporting system. The military does not need to develop overlapping or redundant reporting systems. Research that has already been performed might be leveraged and teams might be formed with others who have spent many hours thinking about this problem.

» Continue to decompose the objectives tree to confirm that the lower level objectives actually answer the question: "How does one measure the higher level objective?" Given that the proposed system is accepted and supported, the specific measurable outcomes should be specified. Once the detailed "bottom level" objectives are outlined, then a data collection plan and a report implementation plan can be specified, and information displays and reports can be designed.